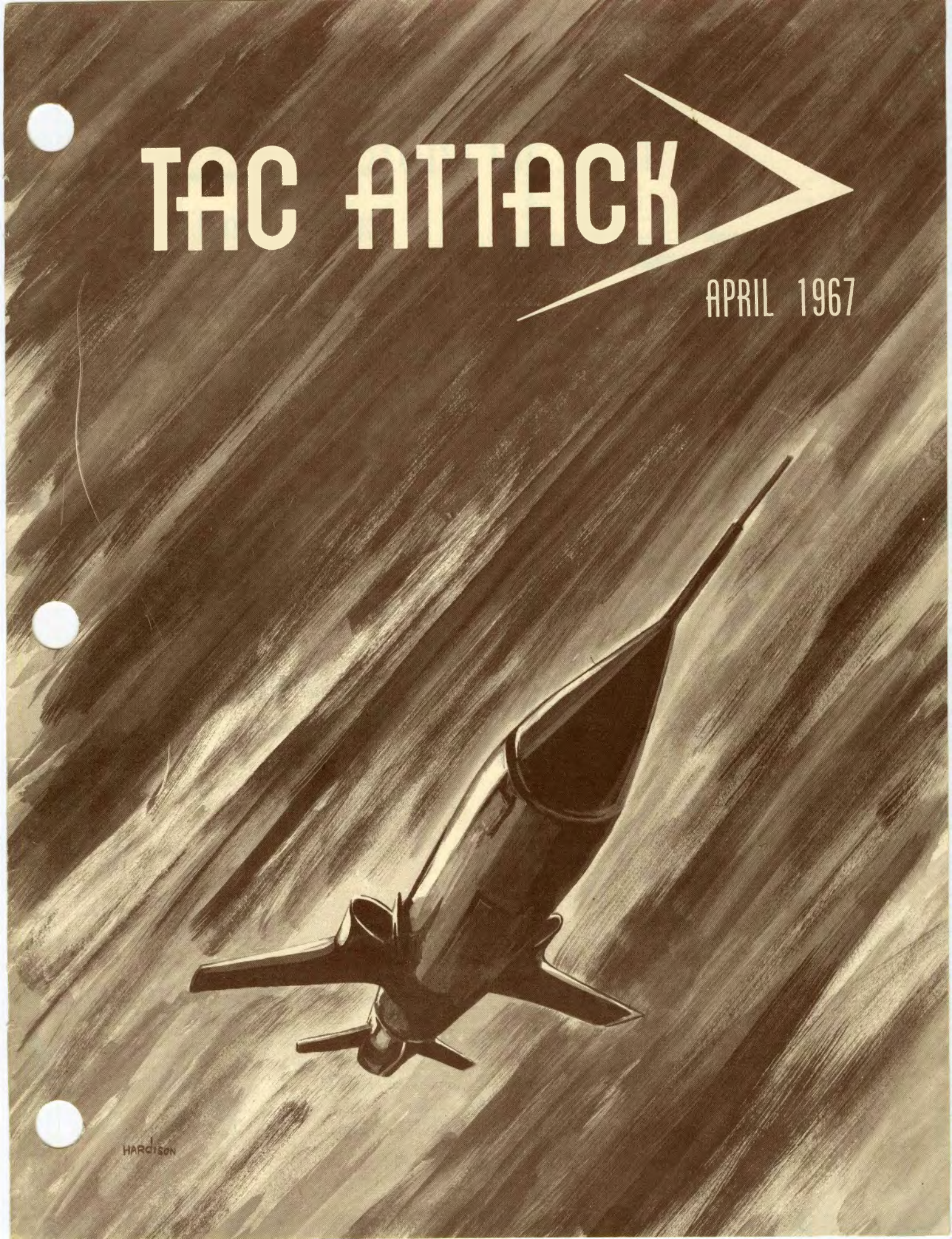
TAC ATTACK

APRIL 1967



for efficient tactical air power

VOL. 7 NO. 4

TAC ATTACK

APRIL 1967

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Angle of ATTACK

Dropped Objects

Unfortunately, objects falling from airplanes when they are not supposed to, have been part of TAC flying operations for a long time. Last year, and so far this year, we have managed to achieve a zero kill rate with these misguided missiles... the air-to-ground dropped object variety. We have missed people and hit real estate. And we have chewed up our airplanes in varying degrees.

But if either our luck worsens or our aim improves, we run the risk of some very preventable deaths this year. The unsuspecting victims can be on the ground or in one of the airplanes involved.

Of the 235 dropped objects reported by TAC units last year, the majority were the result of personnel error. They ranged in size and deadliness from inspection plates to jet engine pods. And they fell from all sorts of airplanes... our newest to our oldest, fastest to slowest.

We pinned down a cause factor in 79 percent of last year's crop of dropped objects... and found that half of these were caused by personnel error. Maintenance people were responsible for about three-fourths of the human errors. These were mostly improper installation or inadequate inspection.

While we recognize that we have problems with manning and skill levels, we cannot afford to use this as an excuse. Rather, we must concentrate our attention on the part that supervisors must play in reducing the problem. We must insist on complete and conscientious use of check lists, approved procedures, thorough stray voltage checks, and correct installation. We cannot tolerate shortcuts.

Commanders and supervisors can substantially reduce the incidence of the dropped object hazard by increasing their interest in the problem. We must build the degree of command interest to the excitement level... the same level of excitement that exists when a dropped object hits the wrong target!

Homer C Boles

HOMER C. BOLES, Colonel, USAF
Chief of Safety

LAST OF A SERIES...

COMMUNICATIONS

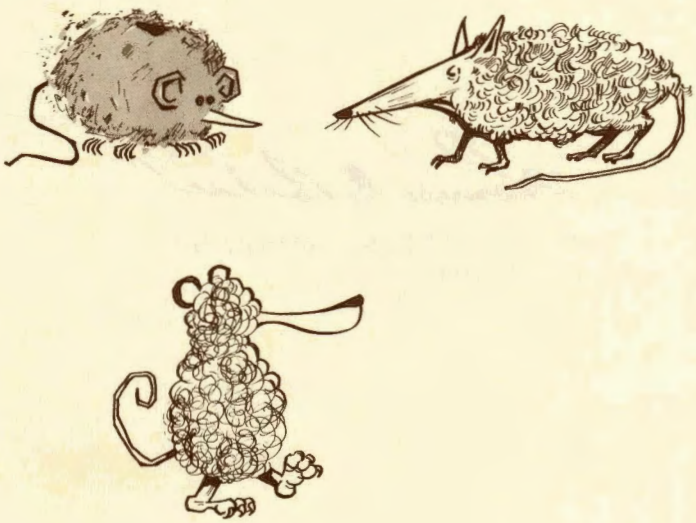
Reprinted from Kaiser Aluminum News

IT'S A MAD, MAD MAZE

Just for fun, read the following description, which is taken from the Encyclopaedia Britannica, and then see which of the illustrations it describes:

It is small, with a long nose, ears and tail, the latter being naked and prehensile. The opposable first hind toe is clawless and the tip is expanded into a flat pad. The other digits all bear claws. The best known species is about the size of a cat, gray in color, the fur being woolly.

(We gave three artists the description above... nothing more... and this is what they drew.)



The description at left is of an opossum. If you didn't guess that, we don't blame you, because first of all, none of the drawings look very much like w we know to be an opossum, does it? And yet, you n notice that each drawing is still a legitimate interpretation of the description. Who can deny that in each picture the tail is naked, the nose is long, etc.?

And second, we didn't include any statements that would conform to what is probably your common conception of an opossum, such as "it hangs upside down when it sleeps and carries its young in a pouch."

But perhaps the point to be made here is that this has been a demonstration of something that occurs very frequently in our everyday dealing with others. We could call it "by-passing," for it happens when someone says (or writes) something, and someone else hears (or reads) something quite different. It is the missing of meaning between persons.

"Time flies."

"You can't. They fly too fast."

This, too, is a very simple and harmless instance of by-passing. Why does it occur?

Well, to begin with, a very cogent argument could be developed that there are more than 3 1/2 billion different languages in the world. Each of us talks, listens, and thinks in his own special language (and sometimes he uses several) which contains sli variations of agreed-upon meanings that are uniq

ividual, and which may change ach second. Our personal language is shaped by our culture, country, province, section, neighborhood, profession, personality, attitudes and mood of the moment. And the chances are pretty remote that even a few of us will share all of these "ingredients" in the same way at the same time.

Lawyers and dentists might disagree for instance, over the word "closure," children could misinterpret the warning of a parent about crossing the street as merely a distasteful restriction, the company vice-president might view a polite comment from the company president as a "subtle suggestion," and so on. It all depends, we might say, on which window we're looking through.

What sometimes renders the dows a bit opaque is the misding emphasis that can be placed on the words. An assertive intonation or a subtle inflection may "change" the feeling of the words. The plain question, "What are you doing?" may become a sarcastic "What are you doing?" or a shocked "What are you doing?" or perhaps a belittling "What are you doing?" depending upon the way it is spoken.

Perhaps the little "conversation maze" here shows how easily our different "language worlds" can cause dead-ends of misunderstanding.

In looking for a clue to solve this often troublesome problem, we might return to what we said last month about listening to people, not just words, to find meaning. If, instead of asking, "What does that mean?" we ask, "What does he mean?" and if we careful to ask this to ourselves before we talk, perhaps we can avoid some of the everyday missed meanings in our communication with others.

IV THIS IS THE BEGINNING...

Some readers may feel that discussing the mechanics of communications has little, if anything, to do with the conversation, dictation, giving or receiving orders, writing notes and letters, studying reports and participating in conferences that make up their working days.

NOT THE END

We'll go along with that. There's no need to understand the combustion engine in order to drive a car, providing the car is working properly. And that's the point. If human communications in everyday home and business life ran perfectly smoothly, there would be no need to understand the mechanism. But... most of us would agree... our daily communications frequently are faulty.

When communications do go awry, it is often useful to review the process to see what went wrong. And this we cannot do unless we know what we mean by process.

Then, too, it may be that there are some who feel that "communications" is something that technicians do (like the man who fixes the telephone). Thus, they feel, communications is someone else's job; not theirs.

Not too long ago, a leading industrial firm studied the way a "typical" executive spends his working hours. The results showed that he spent about 90 per cent of his day communicating. In an average hour he spent about 5 1/2 minutes writing, 9 1/2 minutes reading, 18 minutes talking and 21 minutes listening. It is to be hoped that he may have spent the other six minutes thinking (itself a form of communication), but the study doesn't mention it.

A government sponsored study, carried out by the University of Chicago and the Department of Labor, shows that... as long ago as 1955... at least 50 per cent of the cost of running the American economy was for communications. And a leading aerospace firm recently "costed out" a major project and found that 40 percent of its total cost was for communications.

We cannot pretend, in this brief format, to have said very much about communications; but we have tried to say several things we feel may be important:

- The ability to communicate is not something we are born with; we have to learn it... often the hard way.
- Whenever we talk or write about anything, what we are talking or writing about is something that happened inside us... not outside us.
- If we have difficulty understanding... or being understood... it is likely we have ignored some part of the communications process. It is up to us, individually, to find that part and correct it. This is not an easy thing to do.

Meanwhile, there is a useful little catechism you can apply every time you hear or read something. Its constant use can save a lot of frustration and ease a lot of tension. It goes like this:

- WHO said so? (Don't accept "they" or "a company official" or "someone close to the...")
- WHAT did he say? (What someone says he "thinks" someone else said is probably wrong; forget it.)
- What did he MEAN? (If you are talking to someone directly, asking some questions may help. If he's not around, then possibly what he meant cannot be established; but in asking the question, you at least make it clear to yourself that he may not mean what you think he does.)
- HOW does he know? (Is he an expert? Was he there? What are his sources of information?)

For us, the intensive use of this little set of questions comes as close to a "magic formula" as our latter-day materialism allows. Perhaps it will work as well for you.

Common words do not have meanings -

Only people do.

And sometimes they don't, either.

This series covers one of the biggest problems facing us in the flying business... or anywhere:

It has appeared in four issues of TAC ATTACK through the generous permission and assistance of Don Fabun, who had the idea in the first place, did the research, wrote the material, and published it in the Kaiser Aluminum NEWS, which he edits.

A 2ND LOOK

Returning from an air-to-ground training mission, the student Hundred herder touched down just past Mobile. After lowering the nose and engaging nosewheel steering, he hauled back on the drag chute handle. He waited a few seconds, but didn't feel the customary deceleration.

He tried some size-twelve pressure on the brake pedals. Still no slowing!

And no more reaction than before when he pulled on the drag chute handle a few more times.

When only 3000 feet of pavement remained in front of him, the whole situation was looking pretty terse. He dropped the hook and turned off anti-skid. But Hundred and herder rolled across the BAK-9 together without any sign of stopping. Finally, after snagging the MA-1A and its tailhook adapter, they pulled out 792 feet of chain and came to a stop in the overrun.

Maintenance trouble shooters found the drag chute safe arm jettison mechanism and bearing were worn. The jaws had opened in flight . . . the chute left the bird as soon as the pilot deployed it. When they got into the anti-skid, the trouble shooters found a vacuum leak in the control box, both skid detectors worn.

Out on the runway, investigators traced the path of the tail hook to a quarter-inch lip where two sections of pavement joined . . . eight feet in front of the BAK-9! The hook had stayed airborne for 45 feet! The MA-1A barrier performed just as it is supposed to. It stopped the big bird when everything else failed. But the old MA-thing . . . we all acknowledge it's lik[illegible] last-ditch . . . seldom does its good work with[out] causing some damage to gear doors and things. Th[is] time it took 110 man-hours to put the bird back in shape.

A second look at this incident leads you to wonder about how many material shortcomings our pilots are expected to overcome. Of course, the guy strapped in the cockpit is there because he can react correctly to the infinite number of variations in each flight . . . when he's completely trained. No computer yet devised can replace the judgment a skilled pilot exercises throughout every mission.

But this time the human computer in the cockpit was not completely programmed. It had been exposed to only 44 hours in the F-100. When worn-out, and maybe under-maintained, hardware let him down, the student pilot's analysis and judgment were a bit too slow for the pace of the action. His decision to turn off anti-skid came several thousand feet down the runway after he learned his brakes were acting up. When he did switch the system out of the way, there wasn't room for manual wheel braking to stop him before the barrier.

That left him at the mercy of the under-engineer[ed] BAK-9 installation.

Walking out to his F-100F for an instrument mission, the pilot noted that it was carrying two external fuel tanks under the wings and a SUU-21 bomb dispenser centerline. The Type VII pylon appeared cocked and locked during his walkaround. But when he entered the cockpit, he found the special store handle unlock light illuminated. He told his crew chief to call the armament crew, but thinking he could save some time, the crew chief went under the bird and actuated the ground release screw with his screwdriver.

The SUU-21 fell off!

Just like that!

As advertised!

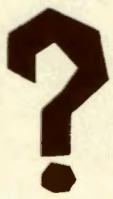
When the embarrassed crew chief came back up the ladder and told the pilot what had happened, they decided to press on without the dispenser. The armament crew had arrived by this time and started to remove the dispenser. Then they decided to wait until the airplane had taxied out of the way.

Pilot and crew chief went back to their routine, started the engine, and went through their checks. When he came to the speed brake check, the pilot gave the signal and received an acknowledgement from the crew chief. He lowered the speed brake. It struck the SUU-21. The right petal of the speed brake broke... and dented the dispenser.

The crew chief could have avoided all the grief had he followed the pilot's instructions and waited for the armament crew. But a second look at this little act shows that it went farther than just the crew chief's breach of discipline. The others involved... pilot, armament crew... failed to use their best judgment.

Efficient, error-free operation in any area of our flying business demands good judgment. For all the check lists and procedures that govern our daily tasks, we still face several situations each day that are not covered by rules.

And that's where experience and good sense come in.



It was to be a formation training mission in the local area. Everything went as planned through engine start, taxi, and takeoff. Then, as Number Two C-123 was joining on Lead, the flight engineer reported to his pilot that fuel was leaking from their right engine. Informing Lead of the trouble, they broke out of formation and feathered the sick mill.

Their return to base and single-engine landing were routine and unexciting.

And the investigation that followed was about the same. The mishap report a couple of days later said they found the leaking fuel came from a loose C clamp on the fuel intake manifold.

No more!

We can be pretty certain the maintenance folks tightened the offending clamp. And a second look at this unit's reaction to inflight malfunctions makes it pretty certain the same thing will happen to them again. They lacked the curiosity to think about the purpose of the report they were sending. And their lack of curiosity about what caused the loose C clamp will prevent the rest of us from profiting by their experience.

by L/Col Carl E. Pearson
Chief, Safety Publications Div.

CONFLICT

"Come alive, a new word for FUN" ... the cycle commercial is appealing and sells hard. A glamorous gal rides the back seat, holding tightly to the fun-loving sportsman up front.

The riders wear strictly sportswear ... shorts, short-sleeve shirts, sneakers. Long blonde curls fly in the breeze.

The scene switches to a seaside picnic ... or a breath-taking mountain landscape ... again the happy pair. Always the shiny, colorful two-wheeler in the foreground ... the carefree, economical, way to adventure for the In Group.

Airman Jim buzzed along the "open road" excited ›ut his new cycle. He had wheels, freedom, and ‹ppy memories of the picnic at the lake. A few brews added to the fun and excitement and he looked forward to next week-end.

"Sure hope that cute little number is there next week," he thought. "Wonder why she didn't let me drive her home. I don't use a helmet, what makes her think she needs one? And goggles too . . . she's a worry-wart. But cute!

He stopped and lit a cigarette. The bike was still a little new to him . . . and these high-crowned roads are something else. They drain well, but they aren't built for two-wheeler types.

He was back at cruise, the legal limit, and took a long drag. Sparks and ashes flew into his eyes. Jim winced, reacted instinctively to the pain, and lowered his head.

In an instant, the pain was gone.

Jim was beyond pain.

The driver in the opposite lane had tried to avoid him. As Jim crossed the center line, head down, the oncoming car pulled as far right as possible. The left front fender caught his cycle and threw him up and over . . . like a charging bull hooking and throwing matador. Multiple, severe head injuries the most ‹ely cause of death, the report said.

Jim didn't get a chance to read much beyond that happy, hard-selling cycle ad. The road-to-romance appeal was hard to resist. And the low price, low payments, umpteen miles per gallon sales pitch clinched the deal. Protective helmet, goggles, and clothing? That'll come later when he can afford it . . . or decides to keep the rig. Besides, look at that carefree couple in the ads!

Life insurance ads, from the people interested in keeping cyclists alive, offer some sobering advice on two-wheel survival. They talk about the other half of the cycle picture. The conflict between the two interested groups is apparent. The selling approach offers you a way to "come alive." The saving approach offers you a way to "stay alive." You can be certain you'll never see these ads on opposing pages in a magazine.

TAC lost seven young airmen last year in motorcycle accidents. All of them violated the basic rules of how to stay alive on a motorcycle. They neglected training, protective equipment, and thinking ahead in the rush to "come alive." And they overlooked the lack of a protecting compartment to absorb the initial, crushing impact. They forgot that you're fair game for any obstruction, light pole, curb, culvert, or car. The speed, power, and wind-in-your-face feeling take over. Instead of helping you to think small, they have the opposite effect.

For you who need convincing statistics: Two-wheelers account for two and one-half percent of TAC's privately-owned vehicle registration, but cycle accidents tallied 13 percent of TAC's privately-owned vehicle fatalities last year. Besides those killed, cycle and scooter mishaps injured many others. Tragically, the trend continues upward.

Where do we stand? We line up with the people who want you to survive on a cycle.

We want you to stay alive!

SURVEYS OF PLACES

Our Surveys of Places continue to uncover situations that can cause accidents to occur . . . if given half a chance. On a recent safety survey we heard of a flight to a midwestern air patch which proved that skill and cunning . . . and a good deal of luck . . . can sometimes thwart the fickle finger of fate. It started out as a no-sweat operation. No weather enroute and destination forecast was clear and 15. Things looked so good that the crew was able to leap off in their sleek T-39 a full 30 minutes early.

The winds were a little higher than forecast, but it was turning into a beautiful trip. As they neared destination, the pilot requested and received an enroute descent, which promptly put him in the soup. The traffic in the area required him to descend in a holding pattern.

Before long, high winds and l altitude were playing heck with his fuel. He requested a GCA but was advised that the radar was out. He would be cleared for a VOR/ILS approach in about 15 minutes. That meant he needed his letdown book. But where in the . . . was it?

And about that fuel gage! The pucker factor was climbing. The pilot told Approach Control that if they didn't turn him inbound before long, he would have to declare minimum fuel. By this time, the passengers were searching for the approach plates, and it wasn't long before one of them found this key to longevity . . . under the co-pilot's seat.

They touched down with a thimble full of fuel, but no further incident. Lesson learned . . .? A little more preflight planning, with more organization in the cockpit could have made this truly a "n sweat" flight.

Where these folks may have lacked fuel in their 39, this was not the problem with the fuel cell repair building we visited on one trip. The stench of gasoline was unmistakable. A quick look revealed that an accident was about to occur. We found no explosion-proof fixtures in the shop. Poor ventilation and a high voltage power transformer sitting inches from the building increased the hazard.

Searching for the source of the fumes, we found an apparently bottomless drainage pit . . . filled with fuel. No one knew how much of the base's drainage system had been so contaminated. This problem can literally cause an explosive situation! Get your ground safety types to look at this one. It needs their attention now.

Battery shops have presente commanders with similar poss

bilities for mass disaster. At two ases we visited recently, the acid mes in these shops were so strong that our tears flowed freely. It may have been that some of the tears resulted from the almost impossible working conditions we observed. Ventilation was poor. But the heating system was even worse. No heat. So why turn on the fan and freeze? Holes in the drain pipes were ample evidence that acids and caustics were not being neutralized.

Explosives problem? There was enough free hydrogen in one of these shops that a spark could have cleared the air, eliminated the hazard . . . the building . . . and the operators.

If you suspect you have a problem in this area, call the environmental health people before you see the "light."

Moving down to the flight line, we saw a 50 ton sky hook trying raise a pranged bird from the ctive runway. About four hours later, both the crane and the airplane were removed. Investigation revealed that someone had previously loosened the crane's clutch plate in order to eliminate the jerking which occurred when they tried to lift a 2 1/2-ton fork lift. I agree that you can always solve this type of problem by eliminating the jerk . . . but find the right one.

Moving on to the base service station, I overhead a conversation. It confirmed something I've often suspected . . . about an event that's happening much too frequently:

A young lad pulled up to the vehicle inspection stall. The attendant casually glanced at his car, filled out a receipt, collected a quarter, and slapped an inspection sticker on the windshield. When the young airman asked if that was all, the attendant turned away saying, "What else do you want for two bits?" Tragically, the young man left the station . . . thinking that he was off the hook. Anyone can have an accident without having to pay someone for the privilege!

Thankfully, not all is bad. Our surveys often reveal aggressive action to keep accidents from occurring on the part of the operators, supervisors, safety managers, and commanders. The use of headlights during the daytime at Hurlburt is a reminder that safety doesn't just happen by itself. Langley motivates the young airman to believing that safety pays by issuing a gilt-edged pass to those who contribute to accident prevention. The Support Group Commander at Luke injects his personal interest by briefing all incoming personnel on matters related to safety. He shows that he is interested in their welfare.

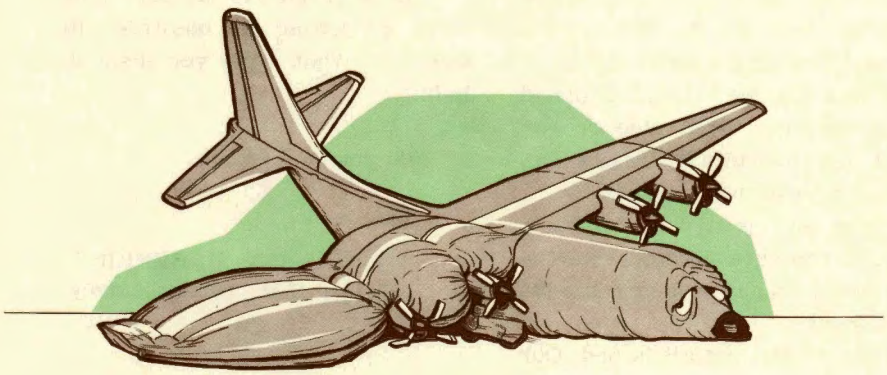
These gimmicks are sure-fire ways of getting the operation to GO . . . What have you done to help?

See you next month.

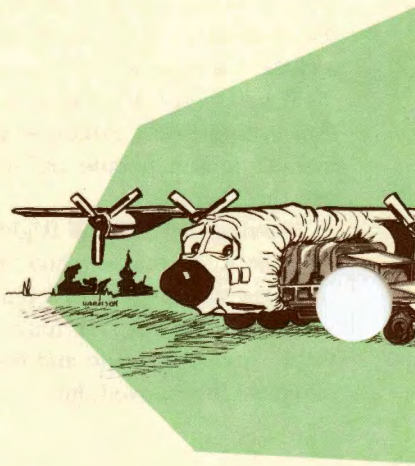
LT COL BEN B. BENIGNO
Chief, TAC Safety Survey Team

SORRY 'bout t

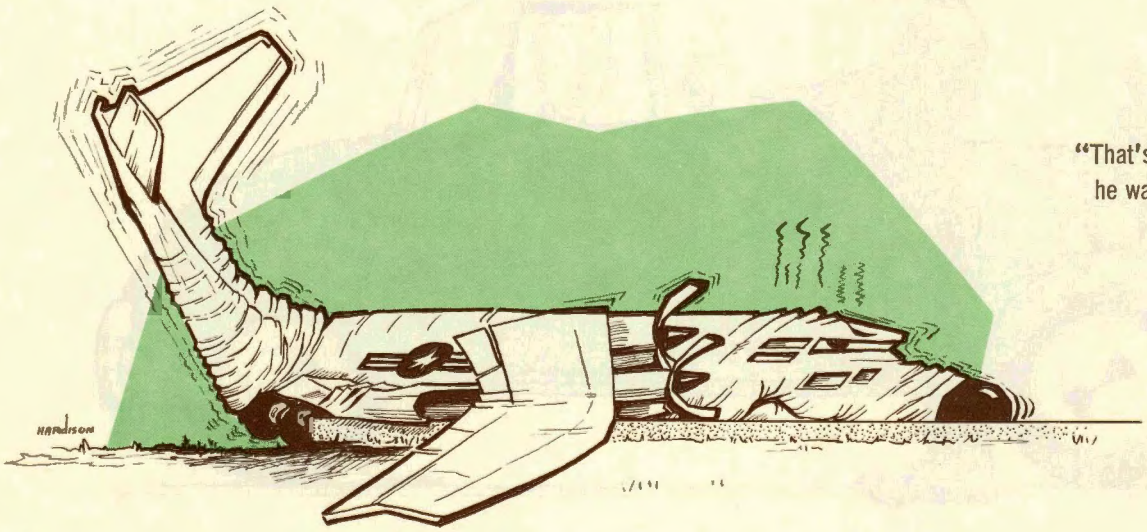
For some reason the Hercules seems to do things to HA
. . . or is it the other way around ? But they come
lesson every time . . .



"So don't get all puffed up . . . I just missed one step in the checklist!"



"Okay, okay . . . so next time we'll use



"That's right, Colonel . . .
he wanted me to show him a sho

hat

RDISON

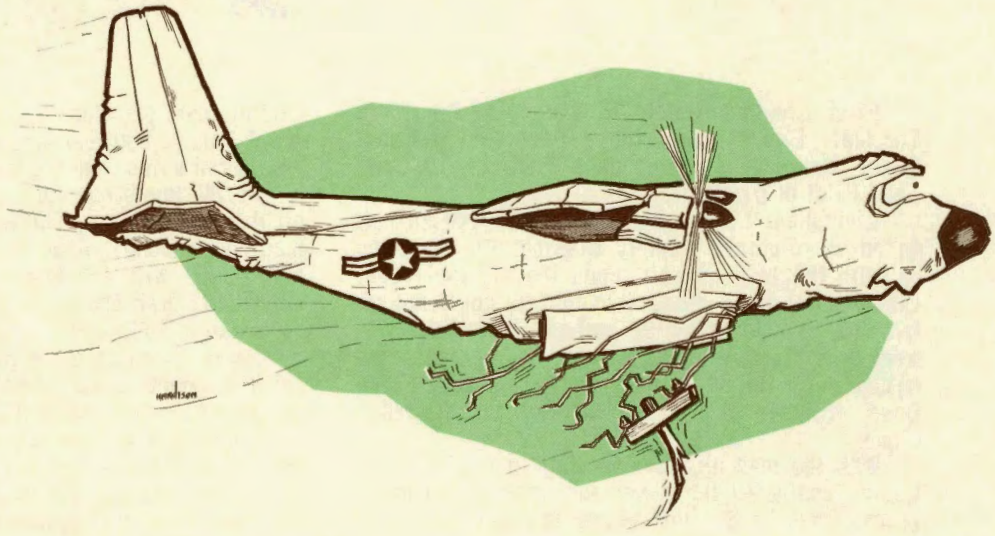
out with a

chocks under the wheels!"

t field landing!"

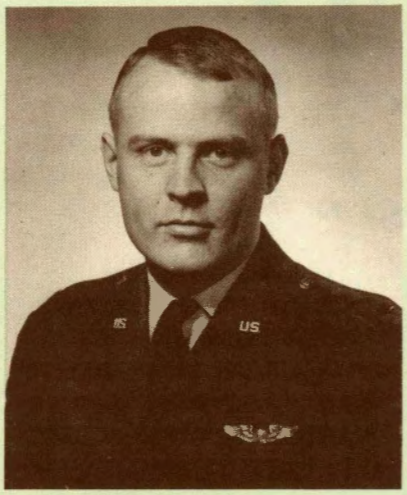
"Oh!! . . . pardon me!"

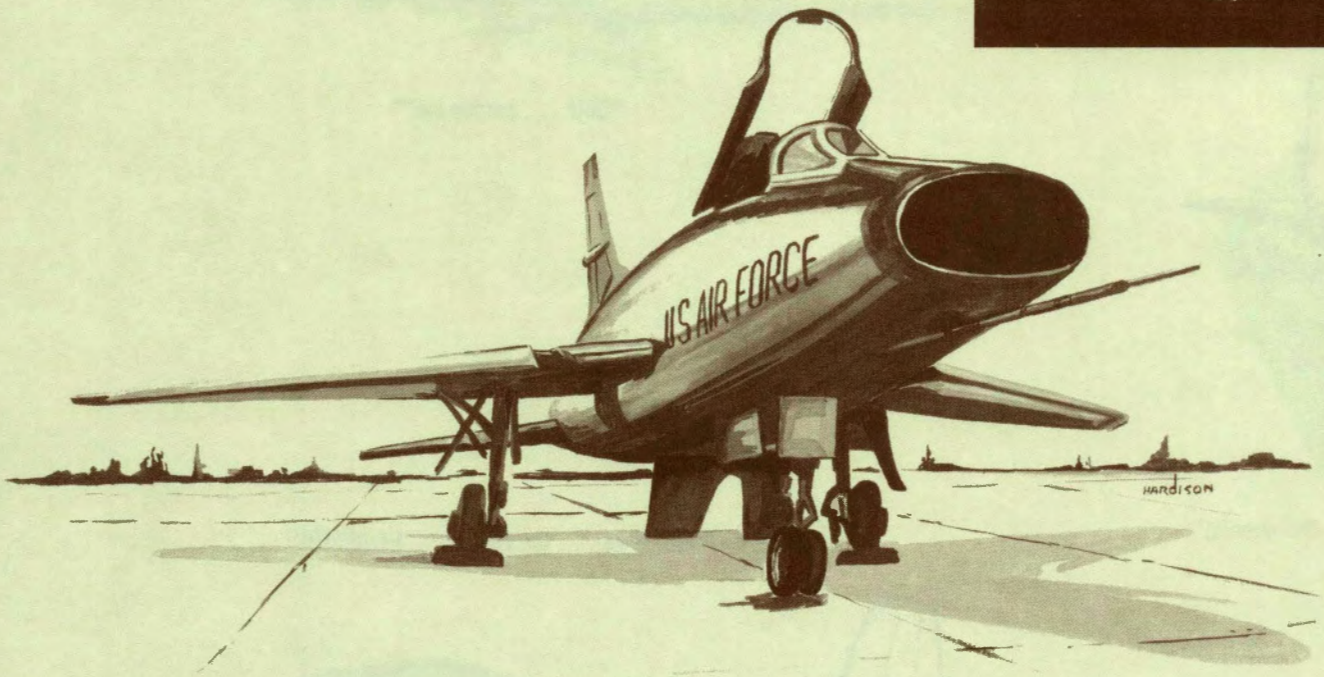
"Put the flaps down . . . the flaps! . . . FLAPS!!!"



TACTICAL AIR COMMAND

PILOT OF DISTINCTION





First Lieutenant Fred N. Larson of the 164th Tactical Fighter Squadron, Ohio Air National Guard, has been selected as a Tactical Air Command Pilot of Distinction.

Lieutenant Larson was flying an F-100 aircraft on an air-to-ground gunnery mission. As he joined up with the lead aircraft, upon leaving the range, Lieutenant Larson discovered that he could not retard his throttle below 96 percent. Throttle movement was free between 96 and 100 percent. He immediately turned toward Patterson Air Force Base, with its 11,600 foot runway, and started a climb.

With the lead aircraft escorting him, Lieutenant Larson contacted the tower and declared an emergency. Once he had the runway in sight, he set up landing configuration, established a 220-knot descent from 21,000 feet, and intercepted the final approach ten miles from the runway.

At 200 knots over the runway overrun he turned off the fuel selector. The engine flamed out in less than five seconds. After touching down at the 3000 foot marker with 170 knots, Lieutenant Larson deployed his drag chute and brought his aircraft to a safe stop at 7000 feet.

Later investigation revealed that a loose steel nut had lodged in the throttle linkage assembly, restricting throttle movement.

Lieutenant Larson's quick, calm reaction to a serious emergency and his thorough knowledge of procedures readily qualify him as a Tactical Air Command Pilot of Distinction.

CHOCK TALK

thorough trouble shooting

Pulling about 4G in a right turn, the Phantom phlyer saw his right generator drop off the line. Oil pressure was above 12 pounds, so he tried to reset the generator. But when he rechecked oil pressure, he found it reading only eight pounds with the engine at 90 percent. He pulled the throttle back to idle. When oil pressure didn't recover, he shut down the right engine and turned off the generator. His single-engine return and landing were uneventful, but he found oil pressure on the windmilling engine had come up to ten pounds!

The instrument people went through the entire trouble shooting procedure outlined in their tech order, using a harness tester and a PSM-6, but couldn't duplicate the malfunction. Almost at a loss to find the trouble, they decided to start shaking electrical connections. Sure enough, when they got to jiggling the engine electrical box cannon plug, the oil pressure gage dropped to 20 pounds and then recovered.

watch it!

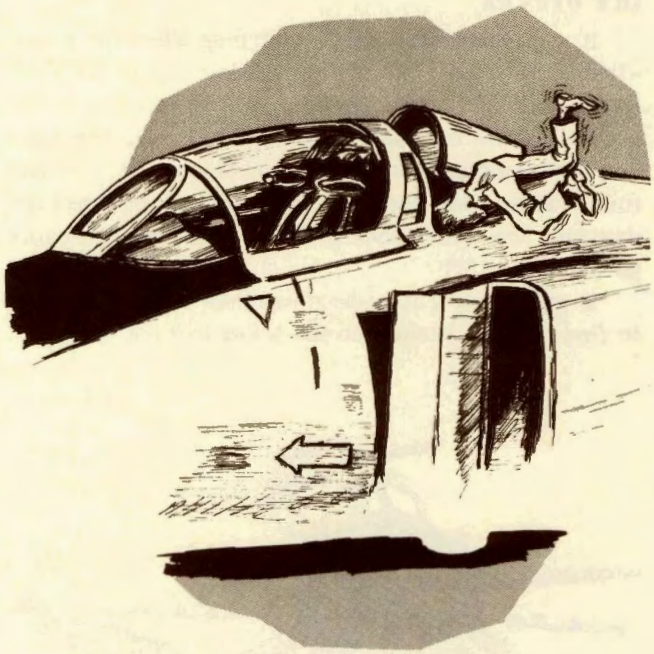
While the Loadmaster was securing a tiedown strap on the ramp of his C-123, the folks up front started Number Two. Just as the engine caught and started turning, the ramp closed on the LM's foot. It hurt!

Apparently the strap tangled around the ramp control lever and moved it to the RAISE position.

aw, c'mon guys

Getting ready to sevice the hydraulic system on his bird, the crew chief rolled the servicing cart up close and went to work. When he was finished, he connected external power, climbed into the cockpit, and moved the flap handle to the DOWN position.

It took the Aero Repair folks 26 man-hours to fix a portion of the left flap that banged into the cart.



stuck strut

After the crew chief completed his work on the Phantom, he reached into the rear cockpit to remove the safety strut so he could close the canopy. The strut would not come loose, so he lifted the canopy with his shoulder. As soon as he removed the strut the canopy slammed down, jamming the strut between the top of the seat and the canopy. His hand was caught between the strut and the seat.

He had not checked the position of the rear canopy OPEN-CLOSE switch.

Another man came to his aid and pressed the external canopy OPEN button. The canopy opened immediately. Luckily, the crew chief's hand was only scratched and bruised. But the canopy didn't fair as well. Although it didn't fall from the aircraft, its glass was broken and the hinge pins were sheared.

It's a safe bet that any time you have trouble removing the canopy safety strut, there's down pressure on the canopy. Lifting the canopy to free the strut under these conditions can only lead to trouble.

surprise!

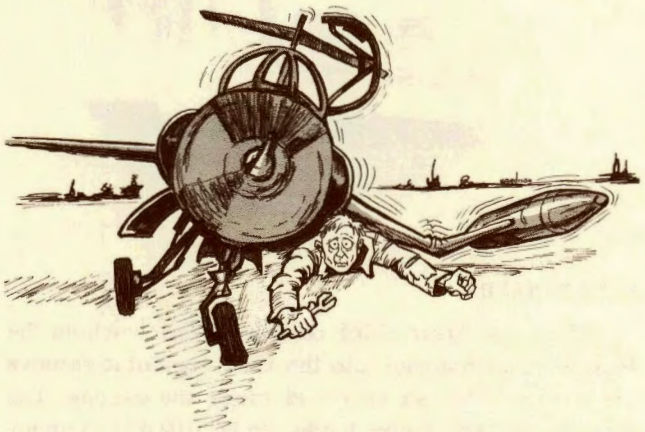
During his first rocket pass of the day, the F-105 pilot extended his speed brakes . . . and watched the right inboard rocket slide out of its tube. It impacted on the range.

Most logical explanation for this one is that the folks who loaded it didn't lock it in the tube.

the breaks

It was very early in the morning when the young airman delivered his NF-2 lighting unit to the area where the RF-4 was parked. And it was two hours before anyone realized what had happened. The light unit was leaning against the nose of the bird . . . it had torn a hole in the radome. When they discovered the damage, the wind was blowing a healthy 27 knots with gusts to 37!

It only took a few short seconds of investigation to find that the brakes on the NF-2 had not been set.



gear trouble-#1

During a periodic inspection on an F-104, the hydraulic specialist was scheduled to remove the drag strut cylinder assembly on the left main landing gear. He arrived at the bird, opened his tool box, and commenced to remove the gear cylinder attaching pin. When he got the pin out, the aircraft tumbled down around him.

That's right . . . no jacks!

gear trouble-#2

Preparing for a gear retraction test to check main gear alignment, the two Tech Sergeants placed a jack under each wing. One of them climbed into the cockpit. The other one went around the F-84 and pulled the gear pins. When the troop in the cockpit raised the gear handle, the bird assumed the collapsed nose gear position.

That's right . . . he had pulled the nose gear pin too!

The report said he did it "unconsciously."

No argument.

stray trash

On the way home from the air-to-air gunner range, the F-86H pilot was flying chase on the dar so he could observe the drop. Approaching the drop area, he applied a little left aileron to move into a better position. When he tried to move the stick back to center, he found it was frozen. Unable to straighten his bird, he leaned into the stick with a good deal of force. Finally it broke loose!

The problem didn't occur again before he was safely on the ground. When maintenance inspectors dug into it, they found a plastic instrument knob near the aileron bellcrank. Unhappily, this is nothing new . . . lost, forgotten, or overlooked parts go unreported too often. This time it didn't end in tragedy. Many times in the past it has!

forgotten object

At about 50 knots on takeoff roll, the phlyers heard their Phantom's right engine compressor stall. The bird yawed a little to the right. They quickly aborted the takeoff, brought their beast to a safe speed, and shut down the offending engine after they turned off the runway.

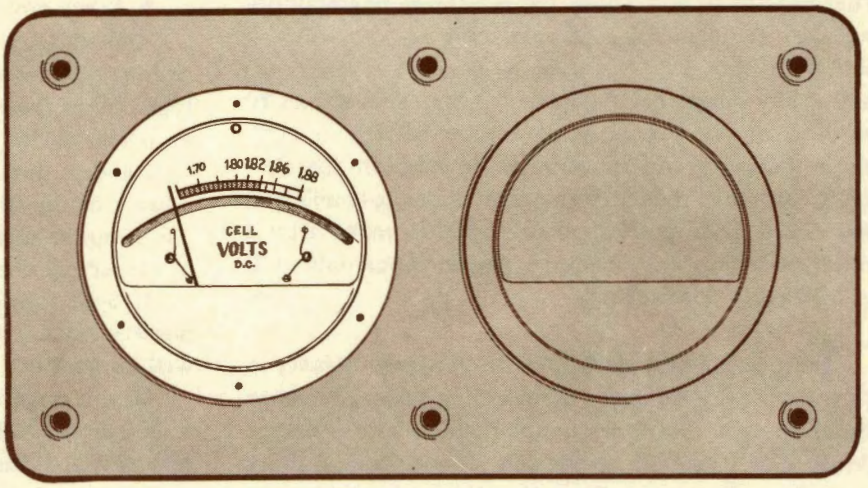
When the engine shop people got a look at the bird they found damage to the compressor requiring r placement of several rotor and stator blades. Th turbines had been damaged to the extent that they were all replaced. The investigators found that an Apex screwdriver bit had gone through the engine. The bird had just completed a phase inspection. From all appearances, someone left the Apex in the engine bay or the vari-ramp area after the inspection. During engine runs and taxi after the inspection, the Apex worked its way into the compressor.

herky hurry

They had towed the C-130 about a mile and pulled up in front of the hangar. Since they were going to back it in, they stopped the bird . . . pointing 90 degrees to the hangar entrance.

The tug operator had two of his men riding the brakes in the cockpit and two more following in a pickup. When he stopped to shift into reverse, he didn't give them time to jump out of the truck and act as wing walkers. They were just parking the truck when the big bird started to back up and turn.

The front of the hangar took a chunk out of the right wing when the two came together.



SILVER-ZINC BATTERY

emergency electrical power for the F-105

by Major John M. Lowery
Hq TAC (OSF)

Most pilots and mechanics take their automobile and airplane batteries for granted. But F-105 pilots and mechanics should know that if they maltreat their $900 silver-zinc battery it can cause major damage . . . or loss of the aircraft.

How is it possible for this sophisticated battery to change from a valuable source of emergency electrical power to an accident waiting to happen?

Here are some little known facts that you may find helpful:

- It requires 12 days to put a 14-cell silver-zinc aircraft battery into operation.
- The total capacity, or charge, of the battery depends on the charge of each cell. Therefore, you must check the voltage of each cell daily before flight. If you don't, the battery and aircraft may be seriously damaged.
- The silver-zinc battery must be removed from the aircraft and serviced every 90 days.
- This battery can prevent the clock from becoming the most important instrument on the F-105's panel.

In the past when an electrician got a reading of 26.0 volts on a battery check, he thought everything was fine. But if his tester should read 25.62 volts, he had no assurance that the battery was serviceable.

When you spread 25.62 volts across the 14 cells in the battery, you come up with 1.83 volts per cell. That is only .01 volt above the minimum permissible voltage. Full capacity of each cell is 1.86 volts. A cell with only 1.83 volts is 30 percent discharged. And if any single cell in the battery is at less than 70 percent of its capacity, the entire battery is considered unsafe and must be removed from the aircraft. For this reason, recent revisions to handbooks and check lists do not require you to make a total voltage check. They require you to check each cell . . . 14 cells per battery.

The plateau voltage for the silver-zinc battery is 22 volts. At this voltage a discharging battery tends to stabilize, or offer minimum decrease in voltage. Under conditions of heavy use, it will drop rapidly to its 22-volt plateau. Then it will maintain this capacity until it is exhausted, when it drops rapidly to two or three volts.

Say you ran your battery excessively on the ground and it reaches 22 volts. Under normal conditions, charging current flows to your battery when a 1.5 to 2-volt difference in potential exists between the battery and the aircraft's 28-volt system. When the silver-zinc battery has reached plateau, the difference in potential is six volts.

This difference causes a relatively high charging current to flow into the battery. Due to the high capacity of the silver-zinc battery, this high current flow can continue for a period that exceeds the limit. This results in severe overheating and the electrolyte begins to boil. It forces its way out of the vents, or pressure builds up and a cell ruptures.

T.O. 1F-105-955 added a warning system to the airplane to tell you when the condition of the battery presents a hazard. It consists of two lights.

The Battery High Charge Light indicates an excessive input to the battery. In other words, the battery has continuously drawn in excess of 160 amps for approximately one minute. If the light comes on while you're on the ground, abort and have the battery changed. If you're in flight, switch the battery off. Should it come on during a long flight . . . a high flight to SEA, for example . . . attempt at least one reset:

- Turn off the battery switch. The light will go out.
- Turn the battery switch back on.
- If the light illuminates within one minute, turn the battery switch off. Leave it off unless you need battery power during an emergency.
- When you land . . . write it up!

The Battery High Voltage Light indicates that the carbon pile voltage regulator has drifted, giving you high output from the DC generator. If this light comes on while you're on the ground, treat it the same way . . . abort. And have the regulator adjusted. When it comes on in flight, turn the battery switch off and use it again only when you need an emergency source of electrical power.

If both lights illuminate, you have a very weak battery. In this condition, emergency electrical power will be limited.

If you have turned off your battery because of a high voltage condition and the CIN Power light illuminates, it means the CIN equipment is receiving excessively high voltage from the generator. In this case, you should turn the DC generator off and leave your battery switch on. Your CIN equipment should be operational again after a short cooling period.

If the CIN Power light cycles on and off it indicates a modular cooling overheat condition, rather than high voltage. When this happens, you should turn the DC generator back on. After landing . . . write it up!

This new system will also warn you when extern. power voltage is too high . . . 28.75 volts for one minute. It's not uncommon for AGE to get out of calibration or for its voltage regulators to malfunction. So if the Battery High Voltage Light illuminates while you're in the chocks on external power, heed its message. You may damage your electrical system if you do otherwise.

Don't get the idea that this new system is a substitute for proper maintenance practices. When you're cross-country, be sure transient alert has an electrician check your battery on preflight. And at home, you crew chiefs must perform a proper battery check on preflight . . . your abort rate will reflect your thoroughness.

The new warning system will no doubt uncover many new problem areas as we gain experience with it. The silver-zinc battery is an efficient addition to the system, but it is sensitive. With proper attention, it will continue to be a valuable aid to pilot and maintenance man alike.

References: Article, The Silver-Zinc Battery, CMS Henry (Ret)
Letter, Battery Sensor Installation, Republic Aircraft Division

WHAT DOES IT SAY ?

. . . phuel phacts phor phlyers

Adapted from material by
V. R. Pruitt, Flight Safety Div.
McDonnell Aircraft Corp.

"Pogo Flight, fuel check."
"Two has 6000 over 6000."
"Three . . . 6000 over 6000."
You look quickly in the cockpit and make your call. "Four. . .4000 over 6000."

If you have to stop and think a minute to be sure which figure tells you the amount of fuel you have available to your Phantom's engines, this article is for you . . . read on.

On four occasions, F-4 crews have failed to note a difference between the tape and counter readings. Four times the fuel-starved engines flamed out. Two aircraft were lost, four phlyers subjected to the harrowing experience of ejection. Two aircraft landed safely because flameout occurred at liftoff on a touch and go.

The fuel gage in the Phantom is designed to give you two pieces of information:

- The sector, a white tape moving against a black background, indicates how much fuel you have in the FUSELAGE CELLS. This is the fuel you have available to the engines regardless of the internal or external transfer modes you have selected. Naturally, this portion of the gage is most important . . . if you have about one half inch of white showing, you had better have a runway in sight!
- The second piece of information comes from the counter. It gives you TOTAL fuselage and internal wing fuel on board in the form of a digital display. It's nice and easy to read and interpret, but therein lies the problem. It is too easy for us to disregard the sector because the counter is more prominent. This can be disastrous! It can mean the difference between returning to the air patch comfortably seated in the aircraft, or making your way home on foot.

To determine if internal wing fuel is transferring, you'll have to monitor both the sector and the counter. If the sector and counter don't match by the time the counter shows 6000 pounds, it's a pretty good bet you will still have fuel in the internal wing tanks. When the difference is about 4100 pounds, both wings are full . . . make sure the stop transfer is in NORMAL and the external transfer switch is OFF. A constant 2000 pound difference most probably indicates that fuel still remains in one wing. If you have all switches in the correct position, the difference may be due to a transfer system malfunction. There isn't much you can do about this in flight. It's a job for maintenance.

You have another indicator independent of the fuel quantity indicator . . . the fuel level low warning light. It works by exposing a thermistor to air when the fuel level in Number 1 and 2 fuel cells reaches 1800 ± 200 pounds. The thermistor is physically located in cell Number 1 but it measures fuel level in both 1 and 2 because they are interconnected.

The fuel level low light is not an accurate indication of fuel remaining. It is only a reminder that your fuel is getting low in the feed tank. If you suspect that your fuel quantity system is in error, believe the warning light . . . it is independent and does not reflect error in the basic fuel quantity indicating system!

Another feature of the indicating system is the feed tank check switch. This is a very useful item if you understand its operation.

When you hold the check switch in CHECK, the fuel quantity system is made to believe that cell Number 1 is the only one containing fuel. When you use the check switch with full internal fuselage fuel, the counter should read 1950 ± 200 pounds on the F-4C (1500 ± 200 pounds on the RF-4C and the F-4D). The sector should indicate the same figures with a ± 150 pound tolerance.

Don't expect a feed tank check to read the 1800 pound figure when the light is on. The low level light reflects fuel quantity in tanks 1 and 2, but the feed tank check is for tank 1 only. With 1800 pounds of fuel in tanks 1 and 2, the feed tank check should give you a reading of 1325 ± 150 pounds.

One last item . . . you get optimum fuel readings only in straight and level flight. Aircraft acceleration and attitude can and will affect system accuracy.

- REMEMBER -

- The sector shows the amou of fuselage fuel immediately available to the engines.
- The counter shows total internal fuel on board that is available to the engines when transferred to the fuselage tanks.
- The fuel level low light means that fuel available to the engines from tanks 1 and 2 is low.

Recognition

CREW CHIEF OF THE MONTH

Technical Sergeant Elbert J. McCrary of the 4th Tactical Fighter Wing, Seymour-Johnson Air Force Base, North Carolina, has been selected to receive the TAC Crew Chief Safety Award. Sergeant McCrary will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.

MAINTENANCE MAN OF THE MONTH

Staff Sergeant James O. Pace, Jr., of the 4510th Combat Crew Training Wing, Luke Air Force Base, Arizona, has been selected to receive the TAC Maintenance Man Safety Award. Sergeant Pace will receive a letter of appreciation from the Commander of Tactical Air Command and an engraved award.

Adapted from a story by
TSgt B. E. Kulifaz
Nellis AFB, Nev

foreign object

007

It was a dark night in base housing. The unsuspecting residents on Boondock AFB moved quietly about their business. A young airman rushed his repair job on his batmobile so he could watch his favorite program . . . Lawrence Wella. In his rush to finish he overlooked the subversive bolt, Foreign Object 007, hiding under the hood. A short time later he charged off to the Club to partake of liquid refreshment. Bolt 007 waited for his planned rendezvous location. At the ramp road he jumped free.

Perfect timing! His plan was working beautifully. That young nut in the batmobile had been fooled completely! Now, for the second step in his plan.

A Security Patrol truck eased along the access road on its way to the ramp. "What a twist," chortled 007. He leaped for a rear wheel and latched deep into the tread . . . on his way to almost certain success.

As the patrol cruised the ramp, 007 waited for the precise moment. Now! He jumped clear and straddled the taxi line. "Pretty sharp for a bolt, if I do say so myself," he thought "I'm in like a burglar."

Foreign Object 007 made it into the intake of a passing F-105 without hardly trying. He had positioned himself in just the right spot. When the flight leader advanced his power to turn the corner, his blast picked up the subversive bolt . . . and Number Two swallowed it.

The violent vibration, flashing lights, and grinding noise all happened in time to stop the pilot before he was airborne. He escaped the evil intent of 007, but the engine had come completely unglued. His mission complete, he departed for the faraway junk yard where all bad bolts go.

As the maintenance troops worked their way thru the parts and pieces, they found the culprit . . . a spent, bent bolt. With the help of unthinking, complacent people, he accomplished his job very well.

Carelessness, neglect, forgetfulness, all contribute to the mounting cost of foreign object damage in TAC. Forgotten tools, dropped nuts and bolts, unused wire, do their deadly work without needing the cleverness of a 007. All they have to do is hang around with complacent people.

We cannot pin down the actual number of lives lost in FOD-caused accidents . . . FOD is a crafty killer. However, we have a pretty fair estimate of TAC's loss in damaged engines:

TAC lost 204 engines to FOD in 1966. It cost an average of $27,000 apiece to repair them.

Join the Counter-FOD Corps! Pick up that $27,000 bolt whenever and wherever you find it!

Foil Foreign Object 007!

TAC TIPS

PLAN AHEAD

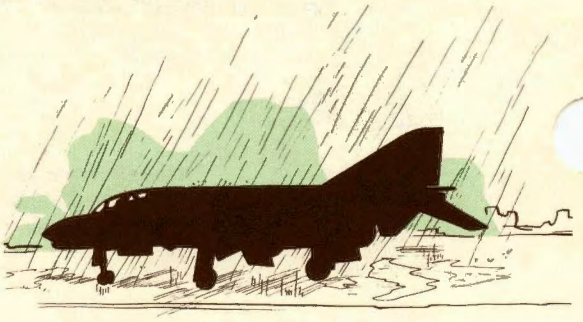
Capt L. W. Harry
Hq TAC (OSF)

Phantom pilots anticipating a need for the rain removal system in flight will do well to give it a quick check on the ground. It may save you the grief of a grease-smeared windshield later. In any event, don't wait until you're a couple of miles out on final before you turn it on. All the cleaning solvent, grease, and miscellaneous gunk that has accumulated in the rain removal duct will splatter across your field of vision just in time to really complicate your landing problem . . . instead of simplifying it for you.

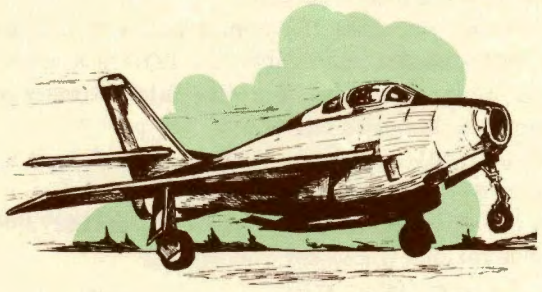
The rule book says not to turn on the system during ground operation unless your power is below 88 percent and leading edge flaps are down.

. . . looks like the best time to flip the switch on for about five seconds is in the chocks during the flap check . . . before you start taxiing.

Give the rain removal a chance and it'll do good work for you.

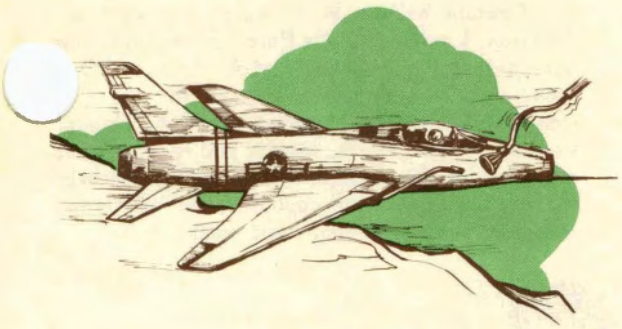


OUCH!



On landing roll, the F-84 pilot found his canopy fogging over to the point where his visibility was seriously restricted. In order to see the taxiway he would turn into, he unlocked the canopy and held it until it reached the full open position. His right hand was on the canopy rail when he approached the intersection and started some serious braking.

It hurt a lot! But when he managed to raise the canopy again, he found it had only broken one finger . . . others have faired a lot worse!



DANGEROUS DRIFT

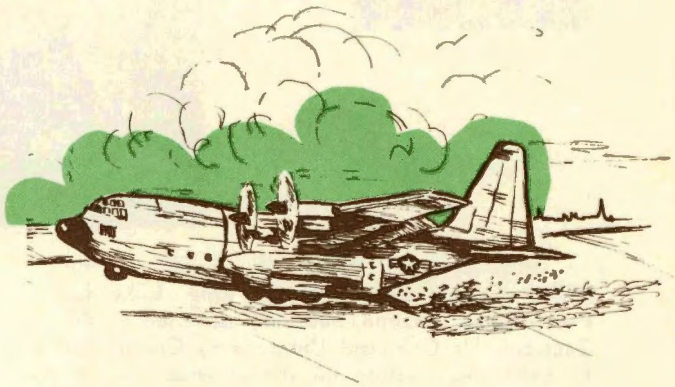
When the F-100 pilot had completed offloading fuel from the tanker, he retarded his power to effect a disconnect. But at the same time he allowed his bird to drift to the right.

As the drogue came loose, it swung to the left and struck the F-100 a glancing blow on the right windscreen. The plexiglass cracked in several places. This time the glass held in place . . . no one was injured.

WHOA!

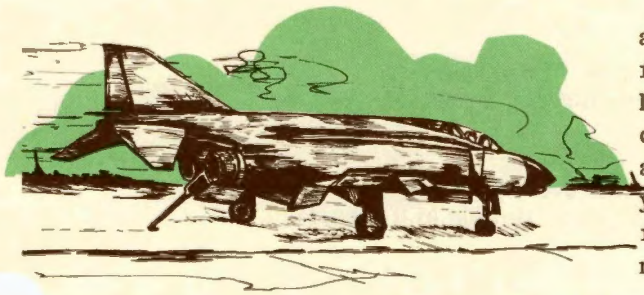
Returning his C-130 from the runup pad to the maintenance area, a young overseas cargo hauler was cleared to taxi down the runway. The crew had not checked all doors closed and lights out, and found themselves whistling along the runway with the rear cargo door in the air delivery position. When the pilot applied a little back pressure to the control column . . . you guessed it, the Herk's nose lifted and the extended ramp contacted the runway. The crew's inspection after parking revealed about 20 man-hours' worth of damage.

The unit involved has directed all crews to taxi their Herkys with ramps and doors closed unless the mission requires otherwise. And they took the spurs off their cowboys.



DOUBLE TROUBLE

Capt. L. W. Harry
Hq TAC (OSF)



What does a Phantom crew do when they want to make an approach end barrier engagement . . . and find that their radio's gone on the blink? The RF-4 folks at Shaw AFB have come up with an intelligent solution that others would do well to consider. To indicate your intent to make an arrested landing in daylight, you fly across the field with your hook down while you rock your wings in the standard radio-out signal. At night you flash your landing light . . . naturally, the hook's pretty hard to see in the dark.

Major James E. Heldt of the 317th Troop Carrier Wing, Lockbourne Air Force Base, Ohio, has been selected as the Tactical Air Command Outstanding Flight Safety Officer for the six-month period ending 31 December 1966. Major Heldt created and administered the flying safety program for the Replacement Training Unit (RTU) conducted by the 317th. Through his diligence and constant emphasis in briefings, ground school lectures, and his duties as Chief Pilot for the RTU, he contributed greatly to the accident-free record attained by the wing during the year.

Outstanding Flight Safety Officer

Captain William H. Parks of the 840th Air Division, Lockbourne Air Force Base, Ohio, has been selected as the Tactical Air Command Outstanding Nuclear Safety Officer for the six-month period ending 31 December 1966. Through Captain Parks' efforts, regular and reserve units assigned to the division have greatly improved their proficiency and capability to efficiently transport nuclear weapons and components.

Outstanding Nuclear Safety Officer

Outstanding Contributor to Explosives Safety

Staff Sergeant William H. Schell of the 4510th Combat Crew Training Wing, Luke Air Force Base, Arizona, has been selected as the Tactical Air Command Outstanding Contributor to Explosives Safety for the six-month period ending 31 December 1966. Sergeant Schell assumed the entire responsibility for the wing's explosives safety program during the year. The excellent explosives safety record achieved by the wing while it flew nearly 28,000 sorties attests to the effectiveness of his efforts.

Outstanding Contributor to Missile Safety

Staff Sergeant Edward Finucane of the 4520th Combat Crew Training Wing, Nellis Air Force Base, Nevada, has been selected as the Tactical Air Command Outstanding Contributor to Missile Safety for the six-month period ending 31 December 1966. Sergeant Finucane's professional competence during missile loadings and his ability to train newly assigned airmen into well disciplined load teams contributed immeasurably to the wing's overall missile safety program.

4th Qtr Drive Safe Award:

Category I - 838 Air Division, Forbes AFB, Kansas
Category II - 4444 Reconnaissance Technical Group, Langley AFB, Virginia

1966 TAC Ground Safety Award:

Category I - 838 Air Division, Forbes AFB, Kansas
Category II - 4440 Aircraft Delivery Group, Langley AFB, Virginia

1966 TAC Traffic Safety Award:

Category I - 516 Troop Carrier Wing, Dyess AFB, Texas
Category II - 4504 Missile Training Wing, Orlando AFB, Florida

1966 TAC Explosives Safety Award:

4453 Combat Crew Training Wing, Davis-Monthan AFB, Arizona

12 Months Accident-Free Flying

TACTICAL AIR COMMAND UNIT ACHIEVEMENT AWARD

180 Tactical Fighter Group, Toledo Express Aprt, Ohio

903 Troop Carrier Group, McGuire AFB, NJ

121 Tactical Fighter Group, Lockbourne AFB, Ohio

175 Tactical Fighter Group, Martin Airport, Maryland

123 Tactical Recon Group, Standiford Field, Kentucky

117 Tactical Recon Group, Birmingham MAP, Alabama

113 Tactical Fighter Group, Andrews AFB, Washington, D.C.

108 Tactical Fighter Group, McGuire AFB, New Jersey

128 Air Refueling Group, Mitchell Field, Wisconsin

160 Air Refueling Group, Clinton County AFB, Ohio

64 Troop Carrier Wing, Sewart AFB, Tenn

130 Air Commando Group, Kanawha AP, West Virginia

122 Tactical Fighter Group, Baer Field, Indiana

931 Troop Carrier Group, Bakalar AFB, Indiana

PEANUTS

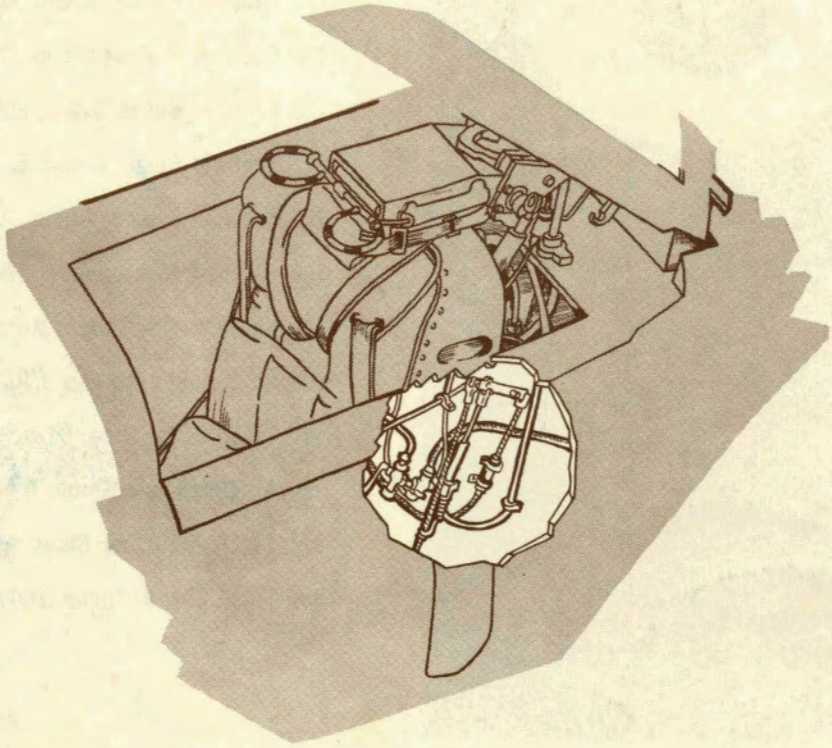
Courtesy of Daily Press, Newport News, Va.

it's an EXPLOSIVE device !

And you can set it off when you don't mean to...

...by reaching into the rear cockpit for the seat pin bag

...or any thing else that's stowed beside the seat.



The canopy initiator is mounted on the left bulkhead in the rear seat of the Phantom. There is no guard over it.

When you reach in from the outside to retrieve anything stored on the left side of the seat, your sleeve can catch on the linkage.

That's when the explosive initiator goes off!!

Since the canopy is up when you reach in like this, it won't go anywhere. But you sure will attract a lot of attention.

It's best to avoid storing anything there on the left side of the seat. But if you must reach into that area . . . do it while you're sitting in the seat.

don't reach over the rail !!